

CLAIMS

1. An apparatus for performing Plasma Chemical Vapor Deposition, whereby one or more layers of silica can be deposited on an elongated vitreous substrate, the apparatus comprising an elongated microwave guide which emerges into a resonant cavity which is substantially cylindrically symmetric about a cylindrical axis, along which axis the substrate can be positioned, the cavity being substantially annular in form, with an inner cylindrical wall and an outer cylindrical wall, the inner cylindrical wall comprising a slit which extends in a full circle around the cylindrical axis, and the guide having a longitudinal axis which is substantially perpendicular to the cylindrical axis and which does not intercept the slit, the slit having a width, W , the elongated microwave guide configured to deliver microwave radiation energy to the resonant cavity, the microwave radiation having a vacuum wavelength, λ , the width, W , of the slit being sized to satisfy the relationship: $W \leq \lambda/10$.

2. The apparatus of claim 1 wherein the width, W , is further sized to satisfy the relationship: $W > \lambda/35$.

3. The apparatus of claim 1 wherein the longitudinal axis does not bisect the resonant cavity.

4. The apparatus of claim 1 wherein the length of the resonant cavity parallel to its cylindrical axis is less than $\lambda/2$.

5. The apparatus of claim 1 wherein a choke is situated outside each open end of the cavity and adjacent thereto.

6. The apparatus of claim 1 wherein where the guide emerges into the resonant cavity, the guide is terminated by a body of material that is transparent to the microwave radiation delivered by the guide.